

**REMARKS**

Claims 1 and 2 are pending in this application. Claim 1 has been amended. Care has been exercised to avoid the introduction of new matter. Indeed, adequate descriptive support for the present Amendment should be apparent from Table 1 at page 11 of the written description of the specification and the related discussion thereof. Applicants submit that the present Amendment does not generate any new matter issue.

**Claims 1 and 2 were rejected under 35 U.S.C. §102 for lack of novelty as evidenced by Adachi et al. supported by Ochi et al.**

In the statement of the rejection the Examiner referred to Table 1 of Adachi et al., example steel number 6, asserting it has a composition falling within the requirements of the claimed invention. This rejection is traversed.

The factual determination of lack of novelty under 35 U.S.C. §102 requires the identical disclosure in a single reference of each element of a claimed invention such that the identically claimed invention is placed into the public domain. *Crown Operations International Ltd. v. Solutia Inc.*, 289 F.3d 1367, 62 USPQ2d 1917 (Fed. Cir. 2002). There is a fundamental difference between the claimed invention and the steel disclosed by Adachi et al. that scotches the factual determination that Adachi et al. disclose a high temperature antifriction bearing part identically corresponding to that claimed.

Specifically, claim 1 is directed to a part of an antifriction bearing for high temperature service comprising an inner ring, outer ring and a rolling element which consist of a steel having particular components in particular amounts and heat treated to have a certain hardness and minimum carbide size. No such steel is disclosed or suggested

by Adachi et al. Applicants would particularly note that the steel encompassed by independent claim 1 has a silicon content which is at least 0.5%. No such steel is disclosed or suggested by Adachi et al. Indeed, Adachi et al. disclose that at a silicon content of 0.5% or more, saturation would occur within an attendant significant degradation of machineability, cold-workability and hot-workability.

The above argued difference between the claimed invention and the steel disclosed by Adachi et al. is functionally significant. Specifically, the present invention is directed to a rolling bearing for high temperature service and, hence, **requires heat resistance**. Applicants have found that the saturation point of the heat-resistant effect is at 3%; **not** at less than 0.5% as taught by Adachi et al.

The above argued functionally significant difference between the claimed invention and the steel disclosed by Adachi et al. undermines the factual determination that Adachi et al. disclose an antifriction bearing part for high temperature service identically corresponding to that claimed. *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986).

Moreover, going one step further there is **no factual basis** upon which to predicate the conclusion that one having ordinary skill in the art would somehow have been realistically impelled to **deviate** from the **expressed teachings** of Adachi et al. and proceed **against** the warning not to incorporate 0.5% or more silicon. It is well settled that one having ordinary skill in the art can **not** be considered realistically motivated to modify a reference in the manner **inconsistent** with its disclosure. *In re Fritch*, 972 F.2d 1260, 23

*USPQ2d 1780 (Fed. Cir. 1992); In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984); In re Schulpen, 390 F.2d 1009, 157 USPQ 52 (CCPA 1968).*

Furthermore, the clear **teaching away** from the claimed invention by Adachi et al. of not incorporating 0.5% or more silicon constitutes evidence of **nonobviousness**. *Specialty Composites v. Cabot Corp., 845 F.2d 981, 6 USPQ2d 1601 (Fed. Cir. 1988); In re Hedges, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986); W. L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983); In re Marshall, 578 F.2d 301, 198 USPQ 344 (CCPA 1978).*

Applicants, therefore, submit that the imposed rejection of claims 1 and 2 under 35 U.S.C. §102 for lack of novelty as evidenced by Adachi et al. is not factually viable and, hence, solicit withdrawal thereof.

**Claims 1 and 2 were rejected under 35 U.S.C. §103 for obviousness predicated upon Takata et al. in view of Ochi et al., the acknowledged prior art and "High Carbon Chromium Bearing Steels" (JIS).**

In response to the argument advanced in the Appeal Brief submitted February 12, 2003, the Examiner asserted that one having ordinary skill in the art would have recognized that the steels of Takata et al. and Ochi et al. were suitable for high temperature use. This rejection is traversed as factually and legally erroneous.

As argued in the February 12, 2003 Appeal Brief, the Examiner has **failed** to provide any **factual** evidence to support the conclusion that one having ordinary skill in the art out in the real world would have recognized that the steels of Takata et al. and Ochi et al., and the SUJ2 steel selected by the Examiner from JIS, are **suitable for high temperature use**. This

factual lacuna is intricately woven to the **particular problem** addressed and solved by the claimed invention. At this point Applicants would stress that the Examiner committed **clear legal error** in ignoring the **problem** addressed and solved by the claimed invention, because it is a **potent indicum of nonobviousness**. In this respect, the Examiner's attention is invited to *North American Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 28 USPQ2d 1333 (Fed. Cir. 1993); *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989); *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 7 USPQ2d 1315 (Fed. Cir. 1988); *In re Nomiya*, 509 F.2d 566, 184 USPQ 607 (CCPA 1975); *In re Rothermel*, 276 F.2d 393, 125 USPQ 328 (CCPA 1960).

As pointed out in the only full paragraph on page 7 of the February 12, 2003 Appeal Brief, the SUJ2 steel which the Examiner seizes upon was **known to have an unsatisfactory service life under a load**. Both Takada et al. and Ochi et al. address the problem of **oxygen** inclusions and provide a material designed for a longer life under a high load. **But the known high temperature problem associate with SUJ2 was not solved.**

The problem with SUJ2 steel was that it must be heat treated with high temperature tempering for dimensional stability which disadvantageously **reduces surface hardness** and leads to decomposition of the retained austenite on the surface. The reduced hardness decreases the rolling contact fatigue life of the roller bearing, and the decreased amount of austenite does not relieve stress concentration in an environment contaminated by foreign matter.

Thus, because the high temperature service required tempering at a high temperature which would degrade the surface hardeners and significantly shorten the life of SUJ2, SUJ2 **could not have both the dimensional stability and surface hardeners at a high temperature at the same time.** Hence, SUJ2 conventionally sacrificed durability.

In this respect, Applicants would invite the Examiner's attention to Japanese Patent No. 2870831 which was filed on July 31, 1989 by NSK Ltd., wherein the following relevant disclosure appears:

Conventionally, in order to preferentially solve the problem of the dimension stability of the rolling bearing for a semi-high temperature use, a high carbon chromium rolling steel (SUJ2) has been subjected to high temperature temper. A high-temperature tempered SUJ2 product has been provided with an improved dimension stability obtained by transforming the remaining austenite into martensite in advance. . . . Although the high-temperature tempered SUJ2 product described above has the improved dimension stability, the high-temperature tempering degrades the hardness thereby shortening a lifetime due to plastic deformation and the like. In addition, because of insufficient anti-friction, the bearing may suffer friction under the boundary lubrication when used at a high temperature.

The above disclosure corroborates Applicants' position that it was well known in the art that SUJ2 is an **inappropriate bearing steel for high temperature use**, because conventional attempts were unable to produce the steel with **simultaneous high temperature dimensional stability and surface hardness**. Not one single reference cited by the Examiner suggests any solution that problem, i.e., simultaneous high temperature dimensional stability and surface hardness. The fact that the applied prior art was **unable** to solve this problem, i.e., simultaneously high temperature dimensional stability and surface hardness, is a **potent indicum of nonobviousness** which the Examiner must consider. *North American Vaccine, Inc. v. American Cyanamid Co., supra; Northern Telecom, Inc. v.*

*Datapoint Corp., supra*); *In re Newell, supra*; *Diversitech Corp. v. Century Steps, Inc., supra*; *In re Nomiya, supra*; *In re Rothermel, supra*.

The Examiner's assertion that SUJ2 is a bearing steel for high temperature service is, therefore, technological inaccurate. Moreover, it matter not one whit whether the steels disclosed by Takata et al. and Ochi et al. are similar to SUJ2. **None of them are suitable for high temperature.**

As previously pointed out, the absence of sufficient facts in this case is inextricably linked to the particular problem addressed and solved by the claimed invention, i.e., simultaneous high temperature dimensionally stability and surface hardness. Applicants have addressed and solved that problem while those having ordinary skill in the art failed. Under such circumstances, the problem addressed and solved by the claimed invention constitutes a **pivotal indicum of nonobviousness**. *Jones v. Hardy*, 727 F.2d 1524, 220 USPQ 1021 (Fed. Cir. 1984).<sup>\*</sup>

In summary, as a factual manner, neither the primary reference to Takata et al. or the secondary reference to Ochi et al. discloses or suggests a bearing steel suitable for high temperature service. Moreover, one having ordinary skill in the art would have recognized the shortcomings of SUJ2 as a high temperature bearing steel, because it was recognized that both high temperature dimensional stability and surface hardness could not be achieved. Thus, it can **not** be said that one having ordinary skill in the art would have been realistically motivated to entwine all of the applied references as knitted by the Examiner with a **reasonable expectation of success**. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Moreover, upon giving due consideration to Applicants' solution of the simultaneous high temperature dimensional stability and surface hardness problem, a potent indicum of

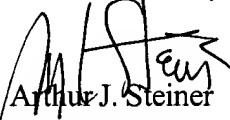
**nonobviousness** particularly since the prior art failed to solve that problem, the conclusion appears inescapable that one having ordinary skill in the art would **not** have found the claimed invention **as a whole** obvious with the meaning of 35 U.S.C. §103. *Jones v. Hardy, supra*. Applicants, therefore, submit that the imposed rejection of claims 1 and 2 under 35 U.S.C. §103 for obviousness predicated upon Takata in view of Ochi et al., the acknowledged prior art and JIS is not factually or legally viable and, hence, solicit withdrawal thereof.

Based upon the foregoing, Applicants submit that the imposed rejections have been overcome and that claims 1 and 2 are in clear condition for immediate allowance. Favorable consideration is, therefore, respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY

  
Arthur J. Steiner  
✓Registration No. 26,106

600 13<sup>th</sup> Street, N.W.  
Washington, DC 20005-3096  
(202) 756-8000 AJS:ntb  
Facsimile: (202) 756-8087  
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